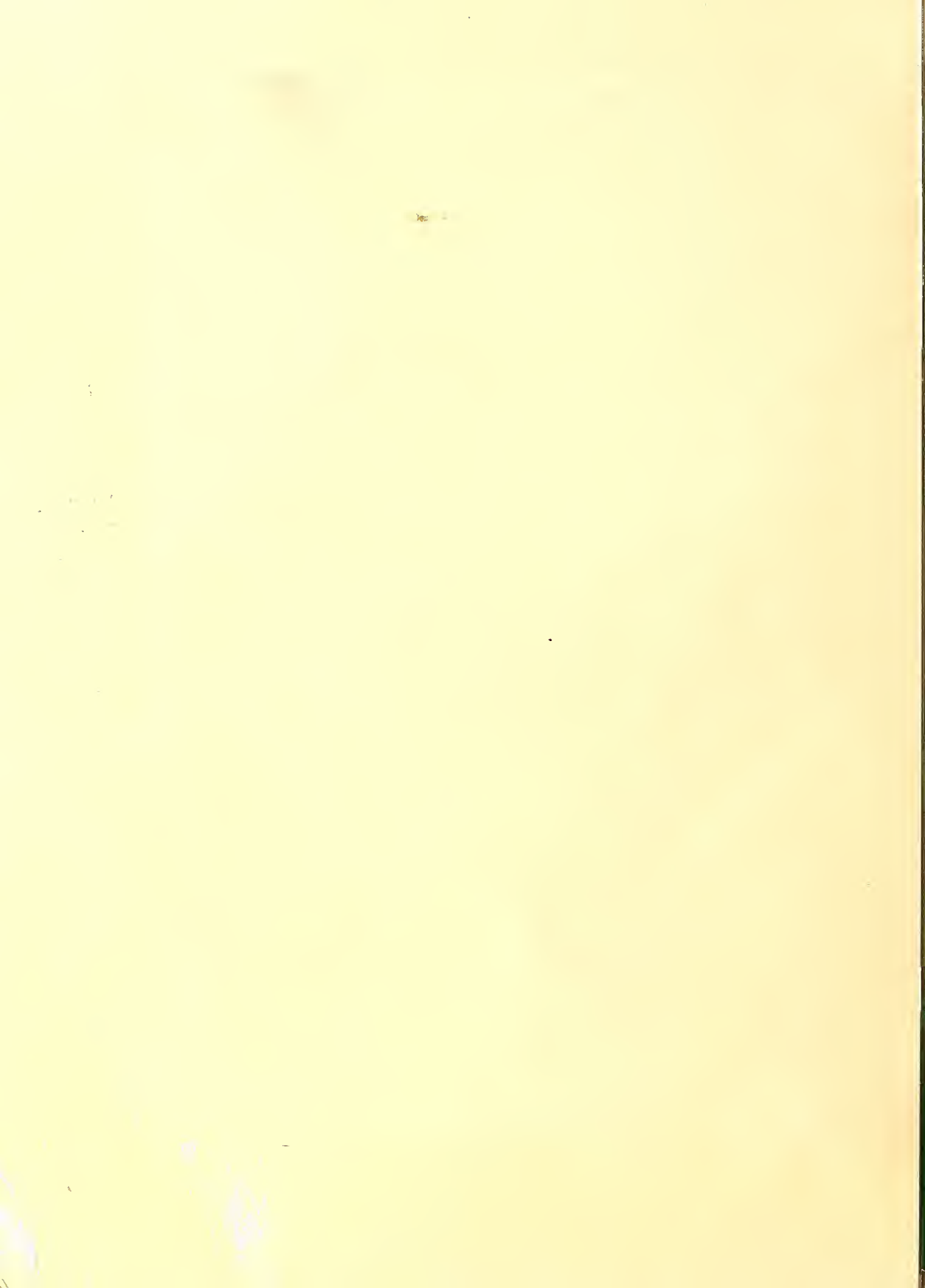


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# An Introductory Guide to Urban and Community Forestry Programs

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*Urban And  
Community Forestry:  
Improving  
Our Quality Of Life*



United States  
Department of Agriculture  
Forest Service  
Southern Region



# An Introductory Guide to Urban and Community Forestry Programs

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Forestry Report R8-FR 16  
Revised October 1993

## Acknowledgements

This edition based partly on a cooperatively-produced publication of the Forest Service's Pacific Northwest and Pacific Southwest Regions, the Washington Department of Natural Resources, Oregon Department of Forestry, California Department of Forestry and Fire Protection and the World Forestry Center of Portland, OR—*An Introductory Guide to Community and Urban Forestry in Washington, Oregon and California*.

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Urban and community forestry can make a difference in our lives. Each one of us can make a personal contribution. As we develop and apply technologies for a better way of life, often times side effects adversely affect our natural environment. For example, in our urban areas summer temperatures and noise levels are higher than in the surrounding countryside. Air pollution problems are more concentrated, and the landscape is significantly altered, reducing personal health benefits available to us by having access to wooded areas and green open spaces. Trees help solve these problems. Now, 75 percent of us live in cities and towns, and we can act individually to improve our natural environment through the planting and care of trees on our own streets, and by supporting community-wide forestry programs. Through technology we are learning more about trees and how they benefit mankind, and how we can do a better job of planting and caring for these trees that make up our urban forests.

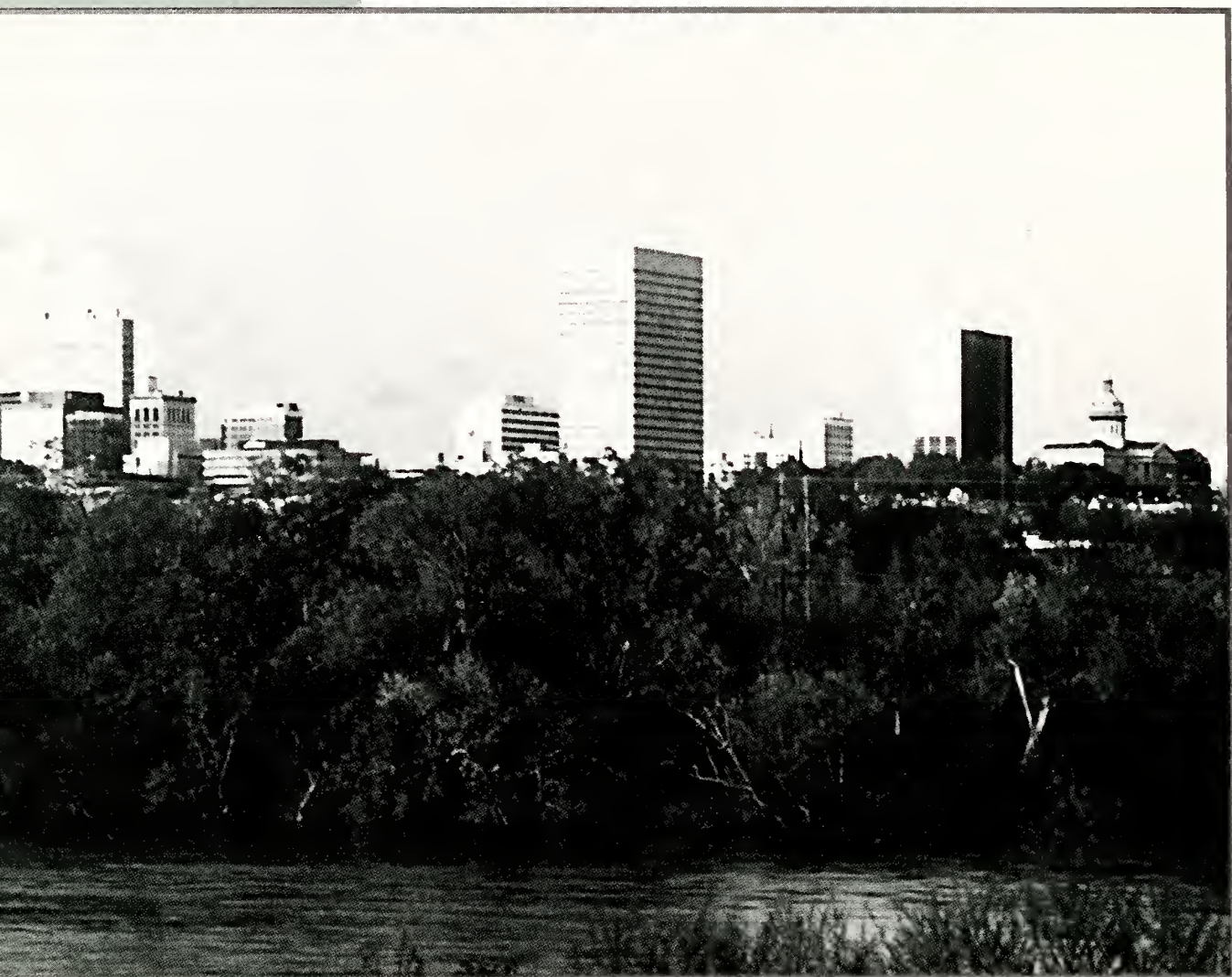






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## PREFACE

How is your forest doing today? What forest? The one that's working hard to make your town a better place in which to live and work. You, as a taxpaying citizen, are part owner, you know! Look out the window - it is out there reducing air and noise pollution, saving energy, adding beauty and dignity to our surroundings, softening harsh inner city lines, soothing our minds, and in general, improving our quality of life.

Three out of four Americans now live in this forest we call home. These urban areas are expanding at a rate of 3,500 acres daily. Does that automatically translate into 3,500 acres of new urban forest? Or is much of it a treeless landscape? Hmm.

Now back to your town, whether large or small. What makes up an urban or community forest, anyway? Simply, the urban forest is all the way from town center to the suburban fringe. The individual components include street trees, open green spaces, undeveloped forested areas, trees in municipal parks and playgrounds, trees and vegetation on private lands - residential, institutional and commercial - and trees around public buildings.

Remember, you are part owner. You have a vested interest in all trees and vegetation on public property in your town. How is your forest being treated? Is it being left to survive on its own without help from you or your

town's officials? How many dead trees are being removed and not replaced, or how many trees are lost to development each year? Most of our community forests are declining in this country. Surveys show many more trees are being removed than planted. Your town may be an exception, but the urban forest decline in most cities is now reaching crisis proportions.

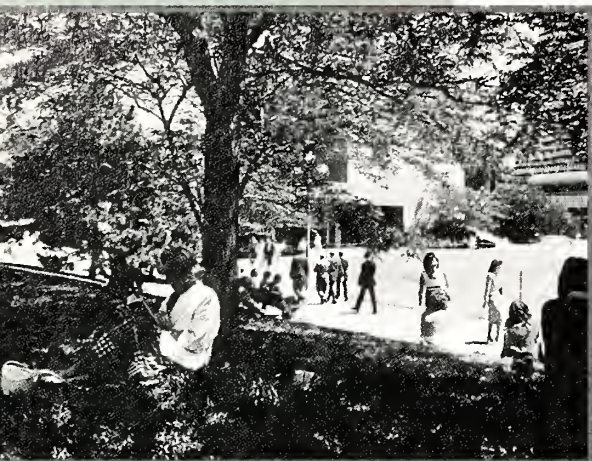
Proper management of this valuable resource is known as urban and community forestry. How do you as a concerned citizen or municipal official get involved? Start with these steps:

- Bring together citizens interested in urban forestry as sources of expertise and program support.
- Contact your newspaper, TV and radio stations to create an awareness of the benefits of trees.
- Provide an opportunity for public officials and citizens to work together to develop program policies and guidelines.
- Inventory your community forest, and - after you know what you have - formulate a master plan on how to manage the resource.

This publication describes the basic functions of developing and operating an urban and community forestry program.

You can increase the health and size of your dynamic partner, the urban forest; it will reward you by taking better care of all of us.







## BENEFITS: WHY TREES?

Trees are always working to help people. Here are eight ways they serve you every day.

**Improving air quality** by trapping and holding dust particles that can damage human lungs. Tree leaves absorb carbon dioxide and other poisonous gases and, in turn, replenish the atmosphere with oxygen for us to breathe. One acre of trees provides oxygen for 18 people and will absorb the amount of carbon dioxide each year equivalent to that produced by a car driven 26,000 miles.

**Saving energy** through cooling in the hotter months and serving as a windbreak during winter. As a result, you burn less fossil fuels for heating and cooling. Trees properly placed around buildings can reduce air conditioning needs by 30 percent. Trees strategically placed for windbreak protection can save 20 to 50 percent in energy used for heating.

**Reducing noise pollution** by absorbing unpleasant sounds from the urban environment.

**Increasing economic stability** by attracting and keeping businesses in a community. The National Arbor Day Foundation reports that people linger and shop longer along tree-lined streets. Apartments and offices rent more quickly and tenants stay longer in wooded areas. Studies by the USDA Forest Service have shown that healthy, mature trees add an average of 10 percent to a property's value.

**Improving personal health** by helping relieve psychological stresses associated with living in metropolitan areas. Trees create feelings of relaxation and well being. Medical research indicates that patients assigned to rooms with a natural view of trees and green open spaces have shorter post-operative hospital stays.

**Improving water quality** by reducing the impact of billions of raindrops - resulting in less runoff and erosion. This allows more recharging of the ground water supply, which is significantly reduced by paving. Wooded areas help prevent the transport of sediment and chemicals into streams.

**Creating wildlife diversity** by providing a local ecosystem. Trees provide a local ecosystem.

Trees provide a suitable habitat for animals and birds that would otherwise be absent from urban areas.

**Adding beauty** by softening the harsh lines of the urban world. Trees often give visitors the first impressions of a community. Picture your town without trees. Is it still a place you would like to live? Trees improve the quality of life for all of us - now, and in the years ahead.





## DEVELOPING PROGRAM SUPPORT

Successful urban and community forestry programs are based on public awareness and support. Concerned resident groups and other grassroots organizations can be the catalyst in stimulating development of community forestry programs. Often the biggest obstacle to developing a program is lack of awareness by the general public and local officials. Heightening awareness toward the need for a program and the many resulting benefits can be accomplished through educational efforts.

Many approaches can be used, depending on the unique opportunities present in each community. Key individuals and local organizations must be made aware of their town's situation and the benefits to be realized from a good forestry program. The media should be enlisted to provide information to the general public. Once this is accomplished, the next step in program development can usually be taken if adequate support is generated. Remember, the key is community outreach and involvement.



*Education and information must be available to local officials.*





## SETTING UP THE PROGRAM

Usually, the first step after initial educational efforts is to establish a legally constituted board, commission or committee to act as an advisory group to city government. This can be done through an ordinance procedure. Tree boards in larger cities may perform in broad planning, policy making, advisory and coordinating roles. In smaller towns, a tree board will be more involved in developing budgets, specific forestry plans and annual work plans, and may even help carry out program operations.

Tree board members may be elected or appointed and may or may not be given policy-making powers. The board may be a financially independent, incorporated entity or a budgeted agency of city government.

Tree boards can continue to promote the community forestry program by providing information to public officials and the general public. Media events such as Arbor Day and Tree City USA activities are effective. Another approach is to publicize completed projects and good work done by individuals, developers, and grassroots organizations. Boards can sponsor educational and training programs such as workshops for developers, municipal employees, city planners and landscape architects to promote and upgrade urban forests.

Primary functions of tree boards include: **1)** Recommendations to the city government on ways to regulate the planting, care, and removal of trees; **2)** An assessment of the community urban forest situation, using some type of inventory analysis to determine short-and long-range program goals and objectives; **3)** Preparation of a comprehensive community forestry plan; and **4)** Preparation of an annual plan of work and an annual report to the

governing body. A broad representation on the board from various agencies and interest groups will increase the board's credibility and its ability to balance the needs of different segments of the community.

The next step to develop a tree ordinance. The purpose of most ordinances is to protect and maintain existing trees while providing for new ones. They usually designate who is responsible for administering the program, how the program operates, enforcement procedures, and set guidelines on tree planting and maintenance.

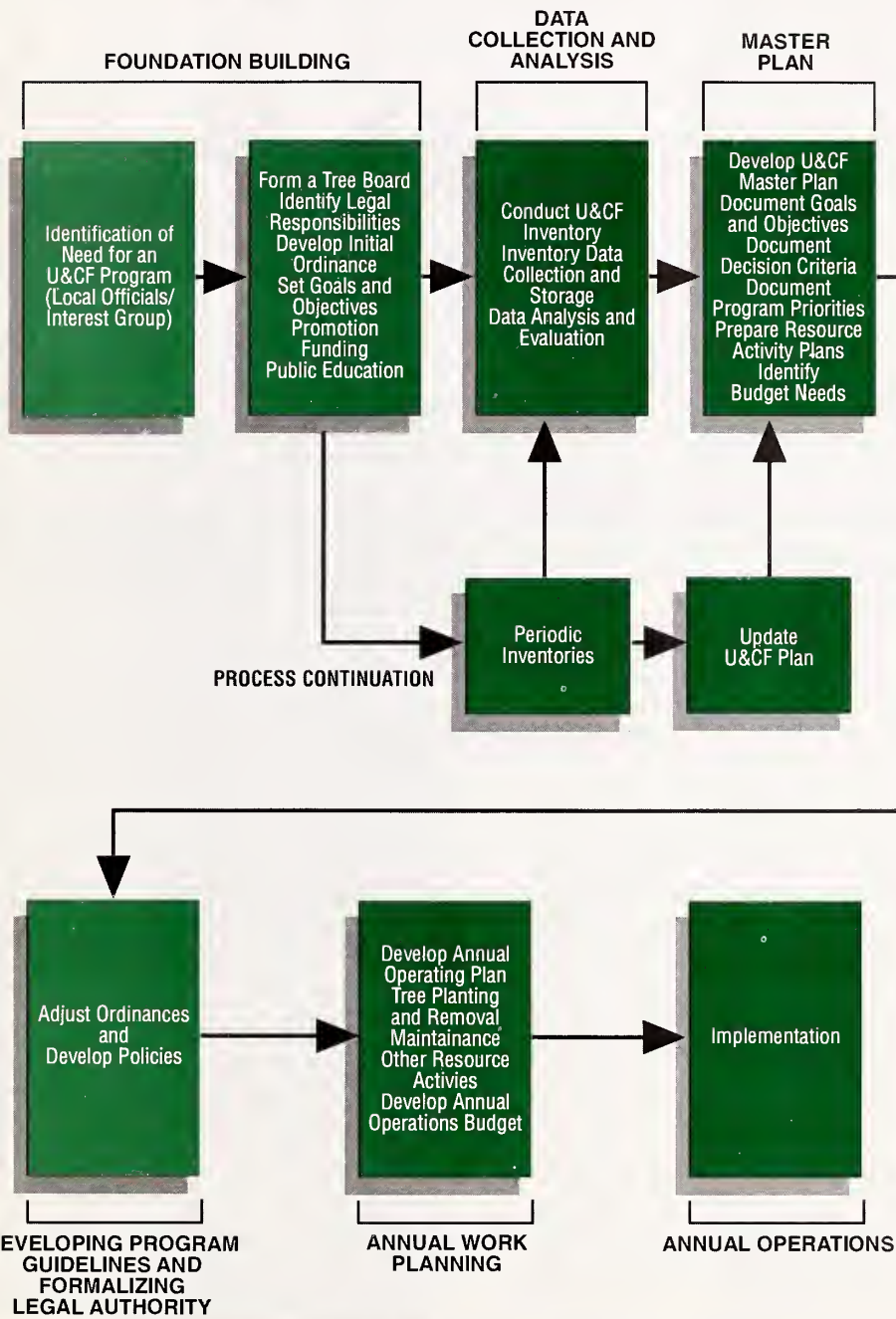
Effective ordinances should be created by a cross section of individuals who are aware of the community's needs. They must carefully balance the biological needs of the trees with what can actually be enforced in that community.

Ordinances provide the legal authority for the municipality and tree board to carry out the community forestry program. The role of the tree board can be incorporated into this document. Also, once an ordinance is in place, supporting policies and



*Arbor Day celebrations  
are an excellent way to  
generate citizen support  
for urban and  
community forestry  
programs.*

## DEVELOPING AND MAINTAINING URBAN AND COMMUNITY FORESTRY (U&CF) PROGRAMS



procedures may be needed for implementation purposes.

Tree ordinances usually provide for:

- actions requiring issuance of permits
- tree removals
- tree preservation (historic, etc.)
- tree protection (e.g., during construction)
- tree planting
- program financing
- private property owner responsibilities
- utility company activities
- designating and handling vegetation hazards on private land
- tree replacement
- tree landscaping requirements (e.g., new developments)
- standards governing arborists
- enforcement procedures (penalties, etc.)
- appeals

A glossary may be attached to the ordinance defining key terminology in the document.

Tree ordinances must be designed to fit each community's needs; consequently, no two ordinances will be exactly the same.



## WAYS AND MEANS

### Budget

A budget proposal requests the financial support needed to meet the program's goals. Each year, local governments attempt to balance the value of municipal programs against their costs. The budget process provides an opportunity to demonstrate the value of urban tree care to the long-term quality of community living. To receive adequate funding, an urban forestry program must clearly document the value of its services as well as its needs. Most decision-makers are not familiar with the technical details of urban forestry, so the budget process may also become an educational process. Make the best use of the attention that decision-makers pay to the program during budget time to make a strong case for community forestry.

### Uses of Funding

This section applies to street-tree budgets only. It does not cover other program costs not directly associated with street care, or the cost of tree programs in parks and on other public grounds. The typical street-tree budget in a new urban forestry program will designate about 50 percent of its funds to tree maintenance, including emergency repairs from storms and other natural disasters. Another 30 percent will be required for tree and stump removal. Only 10 percent will be available for tree planting. The remaining 10 percent is needed for administrative and supervision costs. This is an approximation, depending on each community's funding capabilities, and the condition and size of the present street trees.

The assumption is that funding will be at an austere level and that the city's trees are in dire need of heavy maintenance and removal work. The priority

should be to take care of what you have before substantially adding to the street tree resource. The approach will also reduce the potential for lawsuits resulting from hazardous trees.

After the initial heavy maintenance and hazard removals have been accomplished, some funds initially needed for these two activities can be shifted to tree planting. This may reduce maintenance to 40 to 45 percent of the street tree budget, lower removals to 20 percent, while increasing tree planting to 20 - 25 percent. The fund allocations among activities should be guided by a plan based on a street-tree inventory.

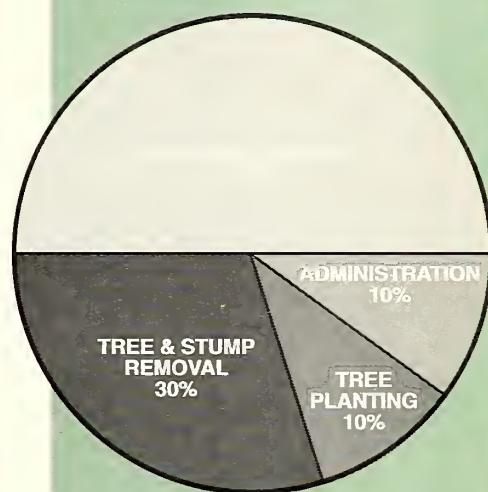
Budget proposals must be based on the best information available, including costs for specific tree care and planting activities.

### Sources of Funding and Other Support

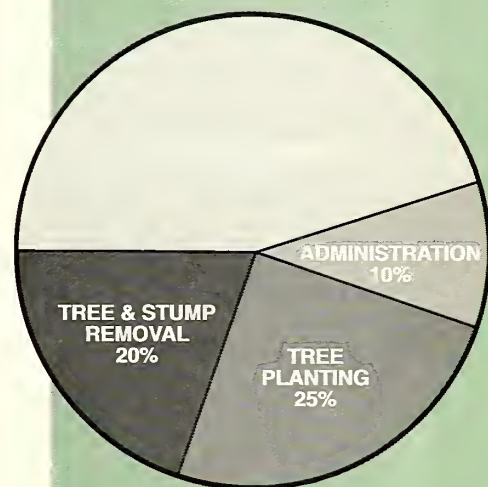
A variety of funding and support efforts can be coordinated to implement community forestry goals. Efforts can creatively aim to combine public and private funding and support. Sources of funding can include public monies from Federal, State and local governments, as well as private contributions from individuals, groups, and businesses. Volunteer labor and materials may also be offered in many cases.

Funds are often easier to obtain for tree planting than for tree maintenance and removal. This is because planting provides a conspicuous improvement in the landscape. In contrast, maintenance is less noticeable and the need may not be as well understood.

The following fund raising and support methods have been used successfully around the country. You can employ similar opportu-



NEW PROGRAM



ESTABLISHED PROGRAM

*Typical fund use in  
Street Tree Activity  
Budget.*





*Trees and open spaces create a less stressful environment.*

nities to support your communities forestry programs. Each community must decide which options are best suited for it.

### Local

Most cities' *general tax fund* finances a large portion of their tree care program. This source is stable and frequently is the only perceived option. However, the forestry program usually faces stiff competition with other programs and services for funding. Therefore, other sources may be used to supplement or displace the general fund.

Some cities collect *species levies* or *assessments* specifically designated for their forestry program or a specific activity in the program. Funds may come from a frontage tax or an assessment on new developments. Surcharges can be made for various municipal services or fees. These funds are both dependable and are easy to administer. They can also be

set up on a continuing basis or have a sunset date.

The cost of the tree care and planting program can be provided for in *municipal revenue bonds*. Residents may fund a tree management program by taxing themselves as a *benefit district* through a majority vote of the property owners, but permissive legislation is required.

Another way to achieve part of the tree management program is to have *landscaping provisions* in the community's tree ordinance or special ordinances covering development of new subdivisions. Usually these require developers to meet specifications for tree preservation and tree planting, with survival guaranteed over a specified time period.

### State and Federal

Although State funding may not be available specifically for community forestry projects, your community leaders can explore several avenues of support. For example, community grants designed to improve development or provide training and employment opportunities are potential sources. Entire community forestry projects can be built into the proposals for these grants, if municipal officials are alert to the needs. Opportunities exist in some States to work with U.S. Department of Transportation officials to designate funding for right-of-way beautification within and adjacent to communities.

Technical assistance is available to communities through your State's forestry agency on all facets of urban and community forestry. Assistance is given on how to develop programs, including specific activities such as street-tree inventories, developing ordinances, tree planting and tree maintenance techniques, master planning, etc. A small amount of funding may be avail-



able for projects through a combination of State and Federal funds. The Cooperative Forestry Assistance Act (Public Law 95-313) is a source of the Federal funding, which authorizes the USDA Forest Service to cooperate with your State forestry agency to provide technical and financial assistance in planning and conducting community forestry programs.

### Other Sources

Government funding is not the only source of revenue for community forestry programs. Support may be given by civic groups, charitable foundations, private corporations, fund-raising projects or any combination of them. The following descriptions outline the major opportunities, but it makes sense to investigate other sources that may be unique to specific communities.

**Community groups and service organizations**, such as Jaycees, Rotary, Lions, Kiwanis, garden clubs, local clean-and-beautiful organizations and others, exist primarily to make the community a better place to live. These groups possess the fund-raising expertise and the flexibility to be valuable partners in an urban forestry program.

**Memorial trees and parks** are areas designated to perpetuate the memory of individuals, organizations or other groups in return for cash donations. This approach can be used on a limited scale for specific projects.

**Trusts** that have non-profit, tax-exempt status allow acceptance of donations from private citizens or foundations. A trust fund earmarked for a specific purpose, such as a shade tree program, guarantees the donors that their contributions will be used only for that purpose.

**Community foundations** may exist or be established to solicit tax-deductible contributions from the community and then distribute the money to community forestry projects.

**Private foundations** are organizations with tax exempt, non-profit status whose sole purpose is to accept money from donors and distribute it to worthwhile projects.

**Endowment funds** serve the same function as foundations, except that the contributions are maintained as principal, which cannot be spent. The interest earned on the principal is distributed as working capital. Endowments are attractive, because they supply long-term support for ongoing urban forestry programs. Some donors may be particularly attracted to this arrangement.

**Marketing wood waste** from trees that have been removed can be an important source of supplementary income. Examples are firewood sales and the sale of wood for fuel in the production of energy.

**Recycling Programs** can also be used to generate funding. Some possibilities are recycling of aluminum, newspapers, bottles, and Christmas trees.

### Non-monetary Support

Urban forestry programs can benefit from contributions of labor, materials, supplies, and equipment that can offset budgeted expenses. Volunteers can be extremely valuable to an urban forestry program. "Hands on" public participation in community forestry activities can help create public support and increase citizen commitment to the urban forest.



*Non profit  
community forestry  
groups are having a  
positive impact on  
urban  
reforestation.*



*Trees help cool  
downtown areas.*



## INVENTORY AND PLANS

Successful community forestry programs are based on well-defined goals and objectives. One of the first objectives should be to conduct an inventory of the community forest. This information provides a basis for developing a plan that will include goals and objectives based on sound field data. The field inventory and plan are also the basis for developing the overall master plan and annual work plans used in conducting program operations on a day-to-day basis.

### Tree Inventories

A tree inventory is a management tool that documents the condition of the community forest. The inventory contains the information needed to outline the management needs for the tree resource. Basic information collected in tree inventories includes: species, stem diameter, location, condition, and maintenance needs. Information should also be collected on suitable planting sites for new trees.

The purpose of a community's inventory can vary depending on the tree size, number of trees, and the distribution of trees; as well as the eventual use that will be made of the information. The inventory can be simple for planning purposes, or more complex for tree management purposes. Different sampling procedures may be needed for different tree categories.

After the type of inventory is chosen, decisions are required on what categories of trees to include. For example, should we count only street trees on public property, or should park trees be included also? How about yard trees on private property, and wood lots on either public or private property?

Volunteers can easily be trained to assist in collecting tree infor-

mation for preliminary planning. However, the municipality should seek technical advice before making decisions about tree inventories. An outline should be made of the information needed for developing the community forestry plan before conducting the inventory. This will prevent collection of the wrong information or omitting information required in the planning process.

Good advice is also needed on how to manipulate the data to provide accurate and usable information for decision-makers. Once a preliminary plan is completed, a decision can be made on whether a more intensive management inventory is desired. A number of computer software programs are available that expedite compiling the data and make the information more accessible and usable.

There are many potential uses for a tree inventory and if the information is accurate, accessible and relatively simple to use, it becomes one of the best tools for making decisions. For example, inventories contain data to form estimated program costs for personnel, equipment, new tree planting, replacement planting, and many other items that have to be addressed in annual work plans. An inventory also documents the suitability of tree species already existing.

The inventory serves as an important tool for allocating limited funds more efficiently. Management decisions can be made more quickly and accurately, and allow for reducing municipal liability through more timely maintenance and removal of hazardous trees.

### Community Forest Plan

Once the information is available from the tree inventory, the next step is to develop a community forest plan. A management



*City staff evaluates trees for inventory purposes*



*Inventory documentation*



plan that is specific, well-organized, and adequately documented supports budget requests by linking expenditures directly to specific community forest management activities. For example, identifying specific locations scheduled for tree planting, pruning, and removals.

An overall community plan is sometimes referred to as a management plan. This can encompass more than management of street and park trees on public property. It can include trees on private property (yards) and larger wooded and undeveloped areas within the urban area.

A management plan is critical for developing, sustaining, and maintaining the urban forest. Economic and social benefits of a systematically managed urban forest must be identified and included. The plan includes long-term goals and objectives to be achieved within specified time periods. It is the source for developing annual work plans that must be flexible enough to accommodate crisis management. For example, work must be done to clean-up after storms and floods.

The plan may incorporate several different management activities for specific community forest resources including street trees, park trees, and undeveloped forested areas. More detailed information for managing the specific resource are contained in sub-plans for activities such as planting, pruning, removal, or tree replacement.

Coordination between sectors of local government in developing and implementing the community forestry management plan enhances its effectiveness, and provides more flexibility for getting the work done. For example, road widening, underground utility installation and repair, overhead line clearing,

planned developments, rezoning, and open-space planning are activities that impact the urban forest. Coordination and involvement of the local government agencies and organizations increase the probability for the survival and enhancement of the community forest.

## PROGRAM OPERATIONS

Well planned tree maintenance, planting, and replacement reflects civic pride and enhances a community's unique character. A commitment to ongoing maintenance should be made every time new trees are planted. The following activities are representative of an individual street-tree sub-plan and are shown only for illustration purposes to keep this guide brief and easy to understand.

A street-tree management operations program can be shown as maintaining the existing resource, and adding to it, with new tree plantings. The following are major tasks in accomplishing program objectives:

### Maintenance Activities

Systematic tree maintenance usually includes the major activities known as removals and replacement plantings, pruning, a fertilization program, and pest control actions. Urban trees, and street trees especially, live and grow in a hostile environment in comparison to forest grown trees. They require intensive management if we are to realize the full potential of their benefits. Intensive management will extend the life span of the community forest and increase returns on investments.

Street trees often grow in soils foreign to the site, have restricted root space, and must endure many types of air and soil pollution. They also endure physical



*Long-term success depends on correct planting techniques.*



*All trees must be watered at the time of planting.*





*All newly planted trees require regular watering until established.*



*Some compacted urban soils may require aeration.*

abuse from people, automobiles, and maintenance equipment. Tree breeding and species selection can help alleviate some of these problems, but cultural practices (arboriculture) are the primary means of sustaining a productive urban forest. Maintenance not only enhances efficiency and helps trees live longer, it ensures the safety of citizens while on public property and reduces the probability of lawsuits from personal injury or property damage.

Within an overall tree maintenance program, hazards and service requests take first priority over other activities, but a well-executed maintenance program will reduce the need for crisis management.

Pruning and other programmed maintenance should receive high priority. The pruning and training of young trees is just as important as the general pruning of mature trees. The first few years after planting are critical in determining tree shape and form, which can reduce maintenance needs and hazard development as the tree grows toward maturity. This is why some of these sub-plans should have provisions for a two-level pruning program.

Mature trees generally need pruning and shaping every 3 to 5 years. Sprouts, dead and broken limbs should be removed, as well as branches blocking road signs, intersections, traffic and street lights, and pedestrian routes.

The street-tree sub-plan should identify prioritized areas in which to plant new trees. This is an expansion of the current resource, and is in addition to the replacement tree plantings. New development areas are a primary opportunity for installing new plantings. This can usually be addressed in the tree ordinance and the expense shared by the developer. The same standards

used for replacement plantings apply to new plantings concerning species selection, diversity, and spacing.

A suitable tree species list, incorporated as part of the plan, recommends certain species for planting in various site environments. In developing this list the following should be taken into consideration: mature tree size, hardiness, insect and disease resistance, crown form, certain maintenance characteristics, and tolerance of various soils and air pollution conditions.

New tree care refers to those maintenance practices required to get the tree established. For example, mulching, watering, staking and fertilizing. This special care is needed for 3 to 4 years (1 year for staking) after planting to ensure survival and good growth. During this time, trees must be pruned and shaped so their crowns will not create unwarranted hazards and minimize future maintenance requirements. The same requirements apply to replacement tree plantings.

Fertilization of young trees after the establishment period provides accelerated growth rates. A faster-growing tree is more vigorous, less susceptible to insects and disease, and will reach a size that is more resistant to injury within a shorter period of time.

Plant health care problems can be held to a minimum with a good maintenance program. The plan should call for selecting species and varieties resistant to specific insects and disease problems. Provisions should be made for species and age diversity. A schedule should be made for fertilization, proper and timely pruning, and the removal of diseased and infected trees. These actions collectively are known as Plant Health Care



(PHC)—synonymous with what pest control specialists refer to as integrated pest management. Artificial control measures may be needed if pest and disease infestations rise above the threshold levels established for each species.

Removal and replacement of street trees include the removal of dead or dying and diseased trees, or any tree that presents a hazard, and the planting of a new tree on the site. Quick removal restricts the spread of disease and reduces the risk of human injury or property damage. Stump removal and disposal of the waste wood is an inherent part of this process. Commercial utilization of waste wood should have priority to help recover costs and reduce impacts on landfills. The replacement planting is guided by the standards in the management plan (e.g., spacing, growing-site limitations, species, and tree size).

### Utilization of Labor and Equipment Resources

The work plans should indicate how the jobs will be accomplished. There are several possibilities depending on each municipality's situation and preference for getting work done. A few options include the use of in-house (city or county) crews, outside contracts, volunteer or contractual labor, or any combination of these.

### In-House Personnel or Contracted Services

The decision on whether to use municipal workers and equipment or contractors, or both, to perform community forestry activities depends on many variables that would be impossible to list here. The following are some of the more common variables:

- The size of the municipality and its urban forest dictate, to

some extent, each community's degree of flexibility in the mix of resources used. Most larger municipalities have a portion of their work done by in-house crews because it assures that crews are available for emergencies and provides for more flexibility.

- Local policies and regulations relating to municipal work forces and purchasing and contracting for services may determine use of in-house resources instead of contracting.

- Cost-effectiveness of in-house services is certainly a consideration. Some activities may be done more efficiently by contractors. While this may not be the over-riding factor, it should be a part of the overall consideration.

- Periodic or seasonal characteristics of some jobs may lend themselves towards contracted services and this may appeal to some decision-makers. Because there is no long-term commitment in financing contract operations, as opposed to establishing a municipal work force and purchasing equipment, funds for use of contractor services may be easier to secure for certain activities.



*Pest management may be required for non-resistant trees to maintain health and beauty.*



*Improper action for forestry management may result in hazardous conditions.*







## SUMMARY

This guide is intended to help municipalities develop and administer community forestry programs. The intent is not to provide a cookbook approach because each community's situation and needs differ. Nevertheless, a comprehensive community forestry program should have certain standard components, and these are discussed. This guide will provide enough information to enable interested citizens and municipal officials to get started on developing a program and enlisting support. Each community's needs are unique and the program should be tailored specifically for that community. More detailed or specific assistance should be sought from professional sources.

The urban forest is constantly changing. Additional trees are planted as a result of new development or to replace old and dying trees, while urban expansion incorporates existing trees from once rural landscapes. Trees grow and change in health, size, and value - individually and in aggregate - while all of this is occurring. Thus, the urban forest is dynamic by nature and a

master plan and program are needed not only to monitor these dynamics, but also to intelligently interject change that will maximize and sustain the forest's contribution to the community. These benefits include increased returns on the community's investment, creation of more natural environment in which to live and work, and an improvement in our quality of life.

Remember, community forestry encompasses much more and is broader than street-tree management. Some sections of this guide tend to concentrate on this particular aspect because it lends itself easily to a description of program activities. A comprehensive community forestry program must, however, address the management of all trees and associated vegetation in developed and undeveloped forested areas, on both public and private lands within and adjacent to urban areas.

Developing and implementing a community forestry program is within the means of any community, large or small. Interest, enthusiasm, and commitment are the principal ingredients.

